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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,259	05/23/2007	Shu Kobayashi	47232-5012	6807

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EXAMINER

LAO, MARIA LOUISA

ART UNIT

PAPER NUMBER

1621

MAIL DATE

DELIVERY MODE

07/09/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/589,259

**Applicant(s)**

KOBAYASHI ET AL.

**Examiner**

Louisa Lao

**Art Unit**

1621

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2 and 14-31 is/are pending in the application.
- 4a) Of the above claim(s) 18,19,25,27,28 and 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,14-17,20-24,26,29 and 30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (P/TO/SB/08)
- Paper No(s)/Mail Date 08/11/2008/05/23/2007
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Applicants' reply of 6/4/08 with respect to the election of a single disclosed species, drawn to Triol (II), R enantiomer, X as alkoxide in NbX<sub>5</sub> and formula V, are acknowledged, which as per Applicants read on claims 1-2, 14-17, 20-24, 26 and 29-30.
2. Claims 18-19, 25, 27-28 and 31 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

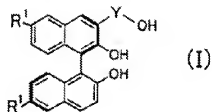
The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

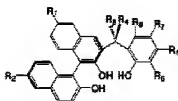
3. Claims 1-2, 14-17, 20-24, 26 and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over *IDS references*: Yoichi et al. JP2002275112, JP'112 or Ishitani et al. Tetrahedron Letters 40 (1999) 2161-2164 or Maruoka et al. J.Org.Chem. 1993,58, 2938-2939 in view of Howarth et al. Molecules 2000, 5, 993-997.

4. Applicants' claims are drawn to a catalyst obtained by mixing a pentavalent niobium compound and a triol or tetraol having an optically active binaphthol structure of R or S



configuration; where said triol is represented by formula (I)

5. JP'112 teaches a catalyst compound useful for asymmetric synthesis catalysts, where said



compound has the general formula (I), where R1 and R2 are each

H, a halogen or a 1 to 3C haloalkyl; R3 and R4 are each H, a 1 to 3C alkyl, a 1 to 3C alkoxy or benzyl which may be substituted; R5 to R8 are each H, a halogen, a 1 to 6C alkyl or an aryl; or R5 and R6 may together form a saturated or unsaturated carbon ring), and a method for producing the same. and R2 are each H, a halogen or a 1 to 3C haloalkyl; R3 and R4 are each H, a 1 to 3C alkyl, a 1 to 3C alkoxy or benzyloxy which may be substituted; R5 to R8 are each H, a halogen, a 1 to 6C alkyl or an aryl; or R5 and R6 may together form a saturated or unsaturated carbon ring), and a method for producing the same (see English abstract).

6. Ishitani teaches zirconium-bis(binaphthol)methane complex used for asymmetric catalytic reactions ( Schemes 1-3 p2162). While Marouka teaches chiral helical Lewis acids, derived from titanium tetraisopropoxide and a chiral ligand derived from optically pure binaphthol, for asymmetric Diels-Alder catalytic reactions (see Summary, Scheme 1)....

7. Applicants' claims differ from JP' 112 or Maruoka et al. or Ishitani et al. in that the instant claims recite niobium.

8. The difference is not unobvious, however, in light of the teachings of the prior art. One of ordinary skill in the art would have found it obvious to utilize a multivalent metal, like niobium with a chiral multi-hydroxy ligand, wherein said metals are found efficacious as Lewis acid catalysts. Illustratively, Howarth et al. teaches Lewis acid catalysts of the Diels-alder Reaction using niobium and tantalum chlorides in the presence of coordinating ligands (see Introduction, p.993, Table 1 p.994, Fig.3 p.996).

9. An artisan would have been motivated to use a different, but equally efficacious metal catalyst, as the central metal in a multidentate component system for an asymmetric reaction to reap the benefits of "uniformly high asymmetric induction as in Diels-Alder reactions", as taught by Marouka et al. (see Summary); and the artisan would reach a reasonable expectation of using other central metal in a multidentate component system for an asymmetric reaction. The claims would have been obvious because an artisan of ordinary skill has good reason to pursue the known options proved efficacious in his art, which are within his grasp, *then adapt and modify them to his needs*. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense."

10. No claims are allowed.

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### *Conclusion*

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Arai et al. Synlett (2004), (6), 1104-1106; Kobayashi et al. (US7351831, US'831).

### *Correspondence*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Louisa Lao whose telephone number is (571)272-9930. The examiner can normally be reached from 8:00am to 8:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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TC1600 GAU 1621

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